MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

BFN3144 – FINANCIAL DERIVATIVES

(All sections / Groups)

21 October 2019
(9.00 A.M. – 11.00 A.M.)
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **5** pages. There are a total of **4** questions.
2. Answer **ALL** questions.
3. Marks are shown at the end of each question.

Answer all questions in the answer booklet provided.

QUESTION 1 (25 MARKS)

(a) Options are derivative securities which are widely used for hedging, speculating and arbitraging. Discuss four advantages of using options. (8 marks)

(b) Discuss which party- buyer or seller should pay margin in trading option. (4 marks)

(c) Read the information on table below and answer the following questions.

Products	FTSE Bursa Malaysia KLCI Futures		Mini FTSE Bursa Malaysia Mid 70 Index Futures		FTSE Bursa Malaysia KLCI Options		Crude Palm Oil Futures		Options on Crude Palm Oil Futures	
Month	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest	Mth Volume	Mth-End Open Interest
Jan/19	181,961	21,402	28,419	296	1,390	514	671,019	188,800	2,800	10,900
Feb/19	141,892	20,897	22,749	327	1,169	505	582,039	211,630	2,300	9,300
Mar/19	178,688	20,820	33,451	336	837	280	943,784	246,407	1,650	6,050
Apr/19	188,973	25,406	34,937	336	1,709	767	864,153	232,810	3,300	6,250
May/19	212,272	26,174	27,812	378	1,510	427	804,623	222,235	2,950	6,200
Jun/19	166,067	19,983	24,961	297	1,217	537	727,134	220,975	1,100	4,950

(i) Provide your comment on the selected derivatives instruments above based on the volume and open interest.

(5 marks)

(ii) Explain volume and open interest. What do these two indicators describe?

(5 marks)

(iii) Are these instruments over-the counter (OTC) or exchange-traded product?

(3 marks)

QUESTION 2 (25 MARKS)

(a) From your analysis, you expect the price movement of CT Berhad to be in short-term bullish when it reaches RM4.00. You are given the following information and state the best strategy for this scenario. (6 marks)

CT November RM5 Put @ RM0.80
CT November RM3 Put @ RM0.30

Continued....

Fill in the table below and draw the payoff diagram. Label the break-even price, maximum profit and loss.
[Assume 1 contract= 100 stocks; you trade 5 contracts]

Stock Prices	RM5.00 Put @ RM0.80	Premium	RM3.00 Put@RM0.30	Premium	Profit/Loss
2.0					
2.5					
3.0					
3.5					
4.0					
4.5					
5.0					
5.5					
6.0					

(13 marks)

(b) Explain put-call parity function and write the function. If the function is violated, what strategy can be performed? (6 marks)

QUESTION 3 (25 MARKS)

(a) Explain time value and intrinsic value of an option. What is the time value when options are at maturity date? (6 marks)

(b) Given the following information, use a multi-period binomial option pricing model to compute the European call option. Assume price changes once per year.

Strike price (X) =RM 6.00
Maturity (T) = 2 years
Current stock price (S_0) = RM8
Volatility (σ) = 20% per annum with 50% upward probability
Risk-free interest rate (rf) = 2% per annum.

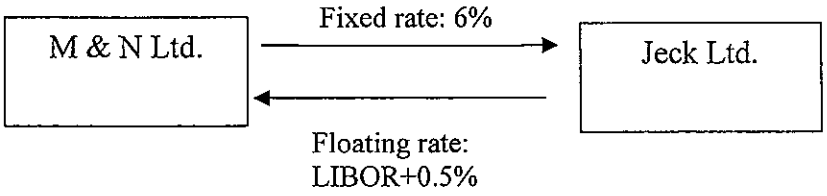
(13 marks)

(c) List any three assumptions made under the Black Scholes option pricing model. (6 marks)

Continued....

QUESTION 4 (25 MARKS)

(a) Diagram below illustrates an interest rate swap between M & N Ltd. and Jeck Ltd.



(i) Explain why companies use interest rate swap. (5 marks)

(ii) If the notional amount is US$50 million and the 1-year LIBOR rate is 5%, calculate the net payment between the two parties and state which party is the payer.

(10 marks)

(b) Read the news below and answer the following questions.

Foreign investors back as net buyers of Malaysian bonds

SUNBIZ /
07 MAR 2019

PETALING JAYA: Foreign investors returned as net buyers of Malaysian debt securities after selling a cumulative RM9.8 billion between November 2018 and January 2019, according to UOB Bank.

The net buying in February stood at RM4.5 billion.

"Inflows in February helped to offset January's outflows, bringing cumulative flows to RM2.2 billion in January and February," it said in a research note today.

Net inflows were concentrated in Malaysian Government Securities (MGS) and Government Investment Issues (GII) in February, which drew in RM4.9 billion and RM800 million, respectively.

Foreign holdings of government bonds (MGS & GII) edged up to RM167 billion or 22.7% of total outstanding against RM161 billion or 22.2% in January.

However, foreigners sold more treasury bills (-RM800 million) and private debt securities (-RM400 million).

UOB said the re-entry of foreign funds into Malaysian bonds is in line with the stronger ringgit and abating sovereign risks.

Continued....

"International rating agencies have reaffirmed Malaysia's sovereign ratings with a stable outlook. Malaysia's 5-year credit default swaps (CDS) has fallen to a year's low of 61."

On the currency front, UOB maintains its view that the ringgit will trade between 4.05 and 4.10 against the greenback before a subsequent move towards 4.15 and 4.18 by mid- and end-2019 respectively, premised on a resumption of Federal Reserve interest rate increases in June and December, lingering risks to growth as well as extended US-China trade negotiations.

"US dollar/ringgit edged up to 4.08/4.09 following the release of Bank Negara Malaysia's monetary policy statement that sounded more cautious on growth with a dovish tilt. Other regional central banks also turned more dovish in February."

Meanwhile, UOB said foreign funds pared down their holdings of Malaysian equities by RM800 million after a net buying of RM1 billion in January. This brought year-to-date equity inflows lower to RM200 million on a net basis. Foreign ownership of Malaysian equities held steady at 23.5%.

Source: The Sun Daily, March 2019.

(i) Explain credit default swap (CDS). (5 marks)

(ii) Explain how investors can use CDS on government bonds to hedge against their risk. (5 marks)

End of Page

Table: Cumulative Normal Distribution

d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)
-3.00	.0013	-1.58	.0571	-0.76	.2236	0.06	.5239	0.86	.8051	1.66	.9515
-2.95	.0016	-1.56	.0594	-0.74	.2297	0.08	.5319	0.88	.8106	1.68	.9535
-2.90	.0019	-1.54	.0618	-0.72	.2358	0.10	.5398	0.90	.8159	1.70	.9554
-2.85	.0022	-1.52	.0643	-0.70	.2420	0.12	.5478	0.92	.8212	1.72	.9573
-2.80	.0026	-1.50	.0668	-0.68	.2483	0.14	.5557	0.94	.8264	1.74	.9591
-2.75	.0030	-1.48	.0694	-0.66	.2546	0.16	.5636	0.96	.8315	1.76	.9608
-2.70	.0035	-1.46	.0721	-0.64	.2611	0.18	.5714	0.98	.8365	1.78	.9625
-2.65	.0040	-1.44	.0749	-0.62	.2676	0.20	.5793	1.00	.8414	1.80	.9641
-2.60	.0047	-1.42	.0778	-0.60	.2743	0.22	.5871	1.02	.8461	1.82	.9656
-2.55	.0054	-1.40	.0808	-0.58	.2810	0.24	.5948	1.04	.8508	1.84	.9671
-2.50	.0062	-1.38	.0838	-0.56	.2877	0.26	.6026	1.06	.8554	1.86	.9686
-2.45	.0071	-1.36	.0869	-0.54	.2946	0.28	.6103	1.08	.8599	1.88	.9699
-2.40	.0082	-1.34	.0901	-0.52	.3015	0.30	.6179	1.10	.8643	1.90	.9713
-2.35	.0094	-1.32	.0934	-0.50	.3085	0.32	.6255	1.12	.8686	1.92	.9726
-2.30	.0107	-1.30	.0968	-0.48	.3156	0.34	.6331	1.14	.8729	1.94	.9738
-2.25	.0122	-1.28	.1003	-0.46	.3228	0.36	.6406	1.16	.8770	1.96	.9750
-2.20	.0139	-1.26	.1038	-0.44	.3300	0.38	.6480	1.18	.8810	1.98	.9761
-2.15	.0158	-1.24	.1075	-0.42	.3373	0.40	.6554	1.20	.8849	2.00	.9772
-2.10	.0179	-1.22	.1112	-0.40	.3446	0.42	.6628	1.22	.8888	2.05	.9798
-2.05	.0202	-1.20	.1151	-0.38	.3520	0.44	.6700	1.24	.8925	2.10	.9821
-2.00	.0228	-1.18	.1190	-0.36	.3594	0.46	.6773	1.26	.8962	2.15	.9842
-1.98	.0239	-1.16	.1230	-0.34	.3669	0.48	.6844	1.28	.8997	2.20	.9861
-1.96	.0250	-1.14	.1271	-0.32	.3745	0.50	.6915	1.30	.9032	2.25	.9878
-1.94	.0262	-1.12	.1314	-0.30	.3821	0.52	.6985	1.32	.9066	2.30	.9893
-1.92	.0274	-1.10	.1357	-0.28	.3897	0.54	.7054	1.34	.9099	2.35	.9906
-1.90	.0287	-1.08	.1401	-0.26	.3974	0.56	.7123	1.36	.9131	2.40	.9918
-1.88	.0301	-1.06	.1446	-0.24	.4052	0.58	.7191	1.38	.9162	2.45	.9929
-1.86	.0314	-1.04	.1492	-0.22	.4129	0.60	.7258	1.40	.9192	2.50	.9938
-1.84	.0329	-1.02	.1539	-0.20	.4207	0.62	.7324	1.42	.9222	2.55	.9946
-1.82	.0344	-1.00	.1587	-0.18	.4286	0.64	.7389	1.44	.9251	2.60	.9953
-1.80	.0359	-0.98	.1635	-0.16	.4365	0.66	.7454	1.46	.9279	2.65	.9960
-1.78	.0375	-0.96	.1685	-0.14	.4443	0.68	.7518	1.48	.9306	2.70	.9965
-1.76	.0392	-0.94	.1736	-0.12	.4523	0.70	.7580	1.50	.9332	2.75	.9970
-1.74	.0409	-0.92	.1788	-0.10	.4602	0.72	.7642	1.52	.9357	2.80	.9974
-1.72	.0427	-0.90	.1841	-0.08	.4681	0.74	.7704	1.54	.9382	2.85	.9978
-1.70	.0446	-0.88	.1894	-0.06	.4761	0.76	.7764	1.56	.9406	2.90	.9981
-1.68	.0465	-0.86	.1949	-0.04	.4841	0.78	.7823	1.58	.9429	2.95	.9984
-1.66	.0485	-0.84	.2005	-0.02	.4920	0.80	.7882	1.60	.9452	3.00	.9986
-1.64	.0505	-0.82	.2061	0.00	.5000	0.82	.7939	1.62	.9474	3.05	.9989
-1.62	.0526	-0.80	.2119	0.02	.5080	0.84	.7996	1.64	.9495		
-1.60	.0548	-0.78	.2177	0.04	.5160						

This table shows the probability [N(*d*)] of observing a value less than or equal to *d*. For example, as illustrated, if *d* is −.24, then N(*d*) is .4052.